

PROCEEDINGS

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DISCUSSION OF
PROCEEDINGS PAPERS

472, 645, 750

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Discussion of
"INFILTRATION GALLERIES"

by Ralph Stone
(Proc. Paper 472)

RALPH STONE,¹ A.M. ASCE.—Mr. Todd's discussion quite clearly illustrates the value of infiltration galleries for collecting water on shallow insular aquifers subject to salt water intrusion. The study of these water collection systems can provide additional data of use to the design engineer.

Some other infiltration galleries that are in use can be reviewed to amplify the record.

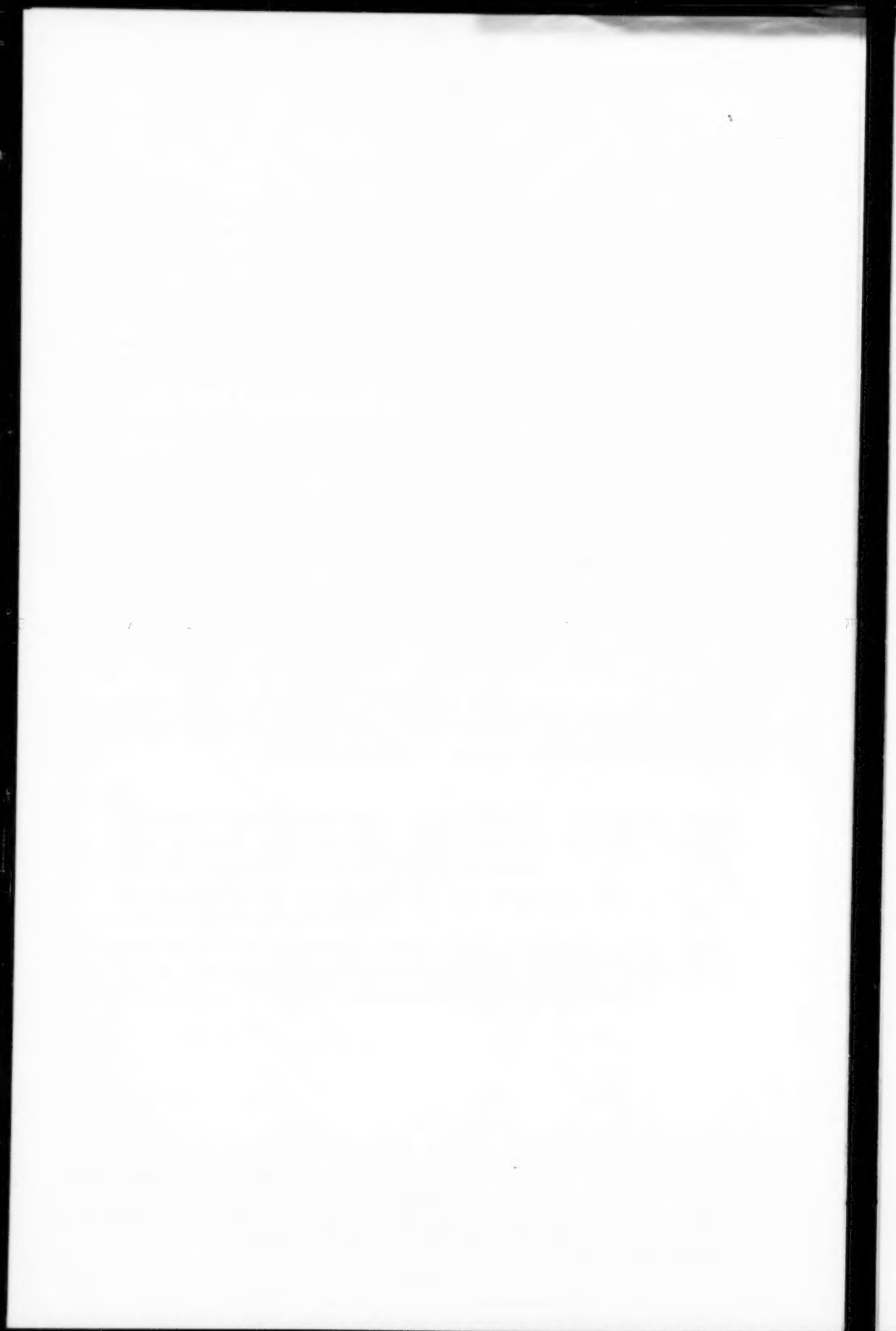
Tenerife,² Canary Islands obtains its water from galleries dug into mountain sides. These galleries are more than 1000 meters long and discharge an uneven flow of 10-500 m³/hr. A new source in the Guimar Valley is producing 1250 m³/hr. from the Pic del Teide.

Rome,³ Italy obtains 70 % of its water supply from springs intercepted by galleries dug into Mount Nuria.

Bellaire,⁴ Ohio in 1953 constructed an infiltration gallery for collecting water. A 24" perforated reinforced concrete pipe is laid on shale 22' below the Ohio River bottom and 100' from shore. The River depth is 12'. The infiltrated water is carried by a 24" non-perforated pipe into a caisson sump 9' in diameter and 41'deep. Two 1000 gpm and one 1500 gpm submersible pumps provide consumers with satisfactory water. To construct the gallery trench, a floating barge was used to remove the river bottom muck and underlying gravel. The pipe was laid into the trench and then backfilled with the gravel and finally the muck cover. Test borings were obtained prior to construction. It is reported that the gallery cost less than an alternative water filtration plant.

In conclusion, the feasibility of infiltration galleries for certain water supply sources can be clearly demonstrated. Adequate ground water studies and engineering design can help develop a sound installation.

1. Cons. Engr., Los Angeles, Calif.
2. "The Water Problem at Tenerife." Bull. Soc. Eaux Barcelone, 1952.
3. Macalalag, E. C. "Impressions About European Water Works" Water Wks Engrg., 1953, 106, 994, and 1024-1026.
4. "Gallery Water Under Bed of River is Cheaper Than Water on Surface." Engineering News-Record, 151, 52 - 55, Dec. 10, 1953.



Discussion of
"THE REMOVAL OF COLOR FROM TNT WASTE"

by Gail P. Edwards and William T. Ingram
(Proc. Paper 645)

GAIL P. EDWARDS^a and WILLIAM T. INGRAM,^b MEMBERS, ASCE.—The authors are indebted to Mr. Ralph Stone for his discussion of treatment of TNT waste and for the methods of minimizing waste water production. Our studies for the Army were limited to color removal from the strong waste produced in the manufacture of TNT.

As indicated by Mr. Stone and others, the methods of treatment and the results obtained with dilute wastes are quite different than with strong ones. Mathews, Rex, Taylor and Newell* of Los Alamos found that chlorine was ineffective on wastes from TNT washout operations and from the machining of explosives where cooling water is used. Treatment of these dilute wastes with activated carbon was the best method for color removal. They reported that neither activated sludge nor digestion was a satisfactory method of treatment. The great resistance to biological action would therefore make the disposal of strong TNT waste on land of questionable value because adsorption on soil would concentrate the waste and subsequent leaching by rain water might carry the toxic, highly colored waste into ground or surface water supplies.

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* Laboratory Studies Pertaining to the Treatment of TNT Wastes, E. R. Mathews, E. H. Rex, R. L. Taylor and J. F. Newell, presented before Division of Water, Sewage and Sanitation, American Chemical Society, New York, Sept. 13, 1954.



Discussion of
"BIOLOGICAL TREATMENT OF HIGHLY ALKALINE TEXTILE
MILL WASTE-SEWAGE MIXTURE"

Progress Report of the Industrial Waste Section of the
Sanitary Engineering Research Committee of the
Sanitary Engineering Division

(Proc. Paper 750)

R. H. SOUTHER¹ and T. A. ALSPAUGH²—Material upon which this report was based may be found in the complete paper by the writers³ which was given to the Industrial Waste Section, A.S.C.E., for review and comments. The research is original in its basic concept, and the experiments were set up after many years of study to find the best methods of treating wet processing textile wastes from various plants.

Under Introduction, Paper 750, it is stated, "It has been an accepted tradition among waste treatment engineers not to consider biological treatment of a waste with a pH over 9.0 unless with a preliminary neutralization." This interpretation in Paper 750 is not the true meaning and value of the writers' research because it is treatment of textile waste at both a high pH and high alkalinity that sets this work apart as original and novel.

In the conclusion of their paper the writers reported for the first time in the literature that, "Contrary to published data, it is indicated that a mixture of up to 40% highly alkaline composite dyehouse, bleaching, finishing, mercerizing, and color-shop mill waste with 60% domestic sewage can be successfully treated with no chemical pH adjustment." The title of the writers' paper³ implies just what it says, "biological treatment of a highly alkaline textile mill waste sewage mixture," and not merely a "biological treatment of waste with a pH over 9.0" as stated in the Introduction of Paper 750.

Another apparent error in Paper 750 is contained in the statement that "laboratory pilot plant trickling filter experiments showed that the highest practical pH was 10.5." Conclusions in the writers' AATCC paper³ state, "Efficiencies above 90% in the removal of objectional organic odor producing substances are obtained up to pH 11.4 through the bio-filter-aeration system but a gradual drop occurs above pH 11.4. The drop in efficiency was due to the high concentration of alkali which only raised the pH slightly."

The writers' paper³ was presented at the National Convention of the AATCC, Atlanta, Ga., September 17, 1954, at a Symposium on Waste Disposal Problems of Southern Mills. Two mills are already treating waste in full scale plants as a result of findings reported in the writers' paper. Results achieved are most encouraging, indicating a new and revolutionary approach to a practical and economical solution of the treatment of both highly alkaline and ordinary textile mill wastes.

1. Chairman, Nat. Com. on Stream Sanitation, AATCC, and Research Director, Cone Mills Corp., Greensboro, N. C.
2. Piedmont Section Stream Sanitation Committee, AATCC, and Chemist, Cone Mills Corp., Greensboro, N. C.
3. "Biological Treatment of Mixtures of Highly Alkaline Textile-Mill Waste and Sewage," by R. H. Souther and T. A. Alspaugh, American Dyestuff Reporter, June 6, 1955.

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